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ABSTRACT

Through an experiment investigating the processes used by several speakers of Asian languages to decode passages by speakers of Australian English, this paper seeks to establish and categorize the types of problems encountered by multilingual speakers when decoding the speech of monolingual speakers in one of their (the multilinguals') second languages. The paper first sketches the differences between problems of encoding and decoding by a multilingual when communicating with a monolingual in one of his (the multilingual's) second languages. The authors then present a preliminary typology of decoding problems of multilingual speakers. Three main types of errors are isolated: omissions, intrusions, and replacements. Subtypes under these headings are considered and the relative roles of the phonological, semantic, and syntactic mechanisms are discussed. The final remarks pose questions for further research with a view to consideration of the differences between monolingual and multilingual decoding. (VM)

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MULTILINGUAL SPEAKERS' PROBLEMS IN DECODING IN A SECOND LANGUAGE

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Problems of multilingualism have received a great deal of attention in the literature of several of the social sciences in recent years. Linguistic approaches to multilingualism have concentrated mainly on multilingual speech which has been analyzed with reference to the two or more languages that are involved in a particular contact situation (Weinreich, 1953, Haugen, 1953, Mackey, 1966, Clyne, 1967), while sociolinguistic approaches have focussed on the relationship between extra-linguistic and linguistic variables (Diebold, 1961, Gumperz, 1967, Rubin, 1968). Decoding as a process worthy of investigation *per se* has been comparatively neglected in multilingual studies, although it has received attention in a general psycholinguistic context in relation to purely monolingual communication (Thorne, 1966, Lieberman, 1967, Halle and Stevens, 1964, Bever, Lackner and Kirk, 1969).

This paper explores the problems encountered by multilingual speakers when decoding the speech of monolingual[1] speakers in one of their (the multilinguals') second languages. The particular instance which will be used for illustration is the decoding of Australian English by Asian students.

The paper is divided into three parts: (1) a sketch of the gross differences between problems of encoding and those of decoding by a multilingual when communicating with a monolingual in one of his (the multilingual's) second languages, (2) a preliminary typology of decoding problems of multilingual speakers in the type of communicative situation delineated in the foregoing and (3) some questions for future research which emerge from the study of multilingual decoding in relation to the possible differences between monolingual and multilingual decoding processes.

DIFFERENCES BETWEEN PROBLEMS OF ENCODING AND THOSE OF DECODING IN A SECOND LANGUAGE

In order to be able to sketch the gross differences between problems of encoding and those of decoding in a second language (L_B) it is necessary to look at some basic and currently much discussed concepts in the context of multilingual communication.

In the literature of multilingualism the relevance of de Saussure's <u>langue/parole</u> dichotomy (or, more recently, of Chomsky's distinction between 'competence' and 'performance') has traditionally been seen in the following way: the object of study in the field of multilingualism is the multilingual's speech (<u>parole</u>) which is the result of the interference of one language (<u>langue</u>) with another. The system which the multilingual speaker himself possesses has not been considered a <u>langue</u> with the result that it has been largely overlooked as a distinct concept with a significant role in multilingual communication.[2]

However, when looking at encoding or decoding processes, it is not possible to proceed without taking into account the multilingual speaker's own system, a 'competence' of some kind possessed by him, with its own specific internal relationships between components. In encoding as well as in decoding, reference has to be made to a system, however unstable, however deviant from the monolingual speaker's point of view. Such a concept of 'competence' needs to be separated from the Chomskyan conception of 'competence' (according to which, a T.G. grammar of English, for example, provides a description of an ideal speaker-hearer's competence in English)[3] as well as from the concept of 'performance'. In the remaining part of this paper the term 'competence' will be used to refer to a unique linguistic system activated at any one given time by an individual speaker.[4]

At any one given time of speaking in L_B (encoding) the multilingual activates a (his) system of phonological, syntactic and semantic rules directly. In his encoding processes he is not forced to apply rules which do not form part of his competence and many multilinguals are in fact very fluent in L_B while their speech exhibits features which are deviant from the point of view of the monolingual listener.

Table 1

Encoding

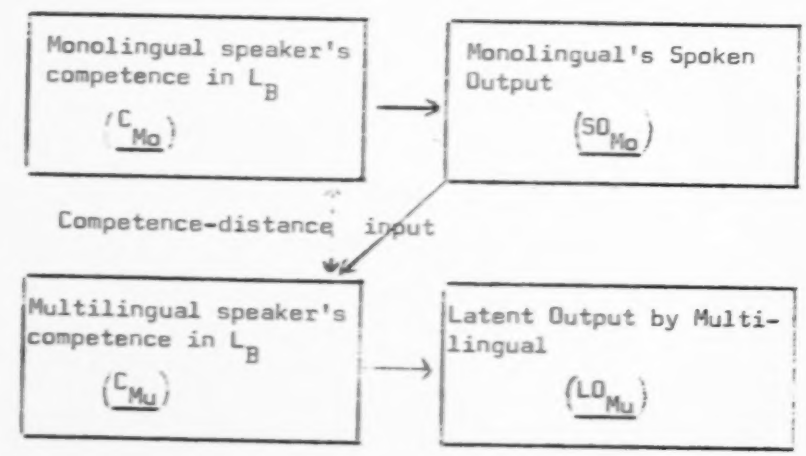
Multilingual speaker's competence in L_B (C_{Mu})	→	Multilingual's Spoken Output (SO_{Mu})

(Mixed end-result of appropriate and faulty learning, of interference from L_A and from L/s_{C-N})

When decoding, the multilingual is faced with a rather different situation. He receives as input a string which was encoded by reference to a competence different from his own. He may be able to decode some of the items in the monolingual's speech by reference to his own (deviant, limited, defective) rules, but there are always items for which his own competence has no reference points and which he (the multilingual decoder) cannot pre-process or synthesize. He is therefore unable to carry out the two facets of the decoding process isolated by Halle and Stevens (1964).[5] Assuming ideal conditions, decoding is successful in inverse relation to the 'competence distance' between the multilingual and his monolingual interlocutor.[6] The output of the decoding process is latent and may partially correspond to the referents of such vague terms as 'what was heard', 'comprehension', 'understanding', 'decoded message'.

Table 2

Decoding

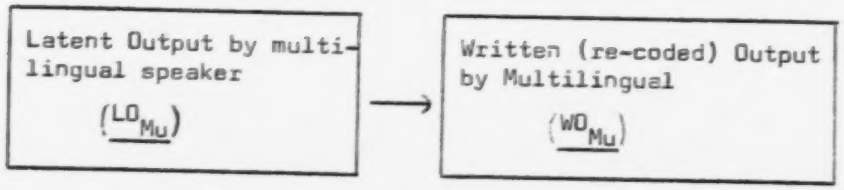


TOWARDS A TYPOLOGY OF DECODING PROBLEMS IN MONOLINGUAL ⟶ MULTILINGUAL COMMUNICATION[7]

In order to formulate some preliminary notions as regards multilinguals' decoding problems, we concentrated on a specific type of situation involving monolingual ⟶ multilingual communication, viz. decoding of lectures delivered by speakers of Australian English. To simulate this situation the following procedure was carried out: Four passages of approximately 100 words each were read in a 'normal' speaking voice onto tape at the rate of 182 words per minute excluding pauses and 173 words per minute including pauses. The speaker was R.S., a native speaker of Australian English from Western Australia.[8] The passages were from a Chemistry textbook, a textbook in Economic Sociology, a West Australian short story and a description from an Australian newspaper of the 'Apollo 11' flight to the moon (see Appendix). 'Normal' speech patterns were modified only to the extent that pauses were introduced at phrase and clause boundaries in order to enable the hearer to write down what he heard in chunks which are assumed to parallel those in an ordinary lecturing situation. The tape was then played to nine Asian students of whom three were native speakers of Cantonese, three of Malay and three of Thai. We elicited 're-coded' written output (Table 3) by asking each of our subjects to write down verbatim what he heard (instructions for this procedure were also recorded on the same tape).

Re-coding

Table 3



When this was completed, each subject was provided with the original texts and asked to read them on to tape. Finally, each subject was asked to define or describe some of the vocabulary items in each passage, in order to locate unknown words. The entire procedure with the exception of the last step (defining words) was previously carried out with five native speakers of Australian English from Western Australia.

A brief note of the type of decoder and the type of speech decoded is necessary at this stage. The Asian student is typically a native speaker of an Asian language, often a fluent speaker of further Asian languages. He has studied English under varying conditions (for details of socio-cultural-linguistic background, see Kaldor 1970). His competence is often more writing than aural/oral-oriented and usually encompasses a fair knowledge of 'general scholarly' English vocabulary. He has come across most grammatical morphemes of English and often has a conscious knowledge of these. While he has, of course, also come across intonation and stress signals of English, he has probably no conscious knowledge of these as no formal instruction accompanied their acquisition. As regards the speech to be decoded, it needs to be mentioned that it involved the oral transmission of utterances basically encoded on paper.

We assumed that WO_{Mu} represented a reflection of LO_{Mu} since a perfect match between SO_{Mo} and WO_{Mu} indicates effective decoding of a kind (this 'phase' or 'aspect' of decoding corresponds to no less and no more than the ability to write down a text matching a text which was read and provided as auditory input). There are, of course, many

aspects of decoding which the procedure described in the foregoing would completely fail to show up. Such notions as 'comprehension', 'understanding', 'assimilation of information' suggest further steps at a level of cognitive processing which demand the attention of the psychologist more than the linguist.

1. SURFACE PHENOMENA

A comparison of SO_{Mo} with WO_{Mu} yielded three main types of surface phenomena. These were: omissions intrusions and replacements. In what follows these main types and their subtypes will be illustrated with examples of which the top line represents excerpts from SO_{Mo} in ordinary orthography and the bottom line WO_{Mu} in the subjects' own spelling. The examples are exhaustive as regards type but do not reflect quantitative data as this was not our aim in the present study. The examples were selected eclectically by the simple criterion of being the clearest illustration of particular types and subtypes of surface phenomena.

Omissions:

Suffixes:

inflectional, (e.g. plural marker of nouns, 3rd. person sg.pres.tense of verbs, past tense marker of verbs, comparative adjective marker)

(1) speeds[9]
speed /7,8,9,13/

(2) resembles
resemble /7,8,9,14/

(3) increased
increase /6,8,9,12, /13,14/

(4) higher
high /7,8,14/

derivational,

(5) restraining (6) attraction
restrain /12/ attract /12/

(7) translational
translation /14/

Prefixes (only one instance):

(8) non-industrial
industrial /6/

Roots: No simple root omission occurred. It must be noted, however, that our approach may not have brought these to light. For example, when a whole transitive verb is omitted and is followed by a noun phrase in WO_{Mu}, it may, in fact, have been represented in LO_{Mu} as 'Vb. past - meaning unknown'. Obviously, however, linguistically untrained multilingual (or, for that matter, monolingual) decoders are unlikely to symbolize this in their WO as '... + (D)'or'... + past tense!.

Words: (9) the restraining forces
the forces / 14 /

(10) over the splotchy grey moon
over the grey moon /6,8,12,13/

Suffix plus following word:

(11) The translational motion of the molecules
The translation of the molecules / 11 /

(12) the restraining forces of attraction
restrain of attraction /11/

Strings:

single (unbroken) constituents omitted:

(13) the astronauts took turns in calling out landmarks
the astronauts took turns in landmarks /14/

strings representing broken constituents omitted:

(14) With a lingering shot over the moon horizon
With a moon horizon /14/

(15) The gaseous state is one in which the component molecules

The gaseous state is molecules /11/

Boundary markers:

sentence boundaries:

(16) He has no desire to accumulate wealth for its
He has no desire to accumulate wealth for his

own sake. Hunger and other physical needs are
own sake hunger and other physical needs

the primary spurs
primary /14/

word boundaries:

(17) "You go home alone, dear"
"You go home in Laundeer" /12/

Intrusions:

Suffixes (similar to types listed under omissions):

(18) characteristic
characteristics/11/

(19) tend
tends /10/

(20) economic activity
economical activities /7/

Short Words:

(21) at high speeds
at a high speed /14/

Boundary markers:

sentence:

(22) The particles are relatively far apart at ordinary
The particles are relatively far apart. At ordinary

pressures and the molecules
pressures and the molecules /13/

word:

(See example No. 17 above)

Replacements: Suffixes (similar to types listed under omissions, but here derivational may replace inflectional and <u>vice versa</u>):

(23) stopped
stops / 8/

(24) increased
increasing /7/

Prefixes:

(25) attraction (26) overcome
distraction /14/ become /7/

Word by other word:

(27) its (28) spurred
his /6,7,9,12,13,14/ spread /6/

Word by non-word:

(See examples 44, 45 below)

Suffix by word:

(29) translational motion
translation of motion /14/

Strings:

As we restricted the interpretation of omission, intrusion and replacement to items which occur between matching items, we did not locate any string replacements. Deviant strings either contained matching root morphemes between replaced affixes or had omissions between single replaced vocabulary items.

2. RELATIONSHIPS AND PROCESS TYPES

We may now turn to the question as to how surface phenomena are related to each other and to the various phases of the entire decoding process.

Omissions may be consequences of (a) faulty signal reception within the given item, (b) faulty hypothesis regarding the given item, (c) faulty signal reception outside the given item (within a following or preceding item) which requires adjustment, (d) faulty hypothesis outside the given item (viz. one regarding a following or preceding item) requiring adjustment, (e) the given item being absent from the hearer's competence, (f) the given item, while known to the hearer, being a type to which attention is not habitually paid by him in his encoding habits (e.g., inflectional suffixes are known to the subjects of this study, but are often omitted in their speech)

and (g) lack of time available for the re-coding process.

If one accepts (as we do) the premise that a certain amount of signal pre-processing must take place before the hearer can proceed to 'analysis-by-synthesis', then one may classify omissions due to cause (a) as primary processes of 'miscoding' (faults in signal pre-processing) and those caused by (b) to (f) as secondary processes of 'misdecoding' (faults in analysis-by-synthesis). The process caused by (g) is in the nature of a loss occurring between LO and WO.

Intrusions can, by definition, be classified only as secondary processes (an item which had not been said could not have been misheard). This type of surface phenomenon must be interpreted as a fault in analysis-by-synthesis or as a change between LO and WO. If it is the former, it comes about mostly through causes (c) and (d) listed under omissions above.

Replacements may be divided into four main categories: (1) those which bear phonetic resemblance to replaced items, (2) those which bear semantic resemblance to replaced items, (3) those which bear neither phonetic nor semantic resemblance to replaced items, and (4) those which bear phonetic resemblance to nearby items. Those in categories (1) and (4) are likely to be (at least partially) due to phonological factors and may be regarded as primary processes. Those in category (2) indicate correct primary and secondary decoding and a change introduced between LO and WO (the item must have been clearly heard and correctly interpreted for a synonym to be supplied). Those in category (3) may be due to any of causes (a) to (f) listed under omissions above and may thus be primary or secondary processes.

3. THE RELATIVE ROLES OF PHONOLOGICAL, SEMANTIC AND SYNTACTIC MECHANISM

In the foregoing, surface phenomena and process types were discussed without reference to the specific roles of phonological, semantic and syntactic mechanisms. We shall now look at the relative dominance of these mechanisms in deviant strings of WO_{Mu}

Primacy of phonological mechanisms

Faulty pre-processing of segmental sounds:

The following items seem to be due to the faulty pre-processing of segmental sounds as the particular vocabulary items in SO_{Mo} were known to the subjects and the replacements represent deviations which do not fit the syntactic-semantic context:

(30) brows
brass /7/

(31) Apollos
explorers /7/

(32) Wealth
world /13/

(33) wrench
range /6/

(34) crater
craper /6/

(35) shot
short /12/

Faulty pre-processing of suprasegmental signals:

Some deviant strings of WO_{Mu} come about at least partially as the result of the faulty pre-processing of suprasegmental signals. Examples are:

(36) satisfied and higher pay[10]
satisfied. Entire pay /8/

(37) labour turnover
labour. :/13/

(38) cómmented Collins
commánded Collins /9/

'Echo'. An interesting phonological mechanism is what we termed 'echo' phenomenon (perhaps akin to Eagle and Ortof's [11] 'clang' phenomena). Phonological sequences of word length or under word length were repeated sometimes at a distance of several words:

(39) living rooms
living rings /8/

(40) Higher pay usually holds down the rate of labour turnover
Higher pay usually holds the rate of pay turnover /10/

Metathesis. The exchange of segmental sounds or words (sometimes with subsequent adjustment) occurred within and across word boundaries:

(41) bid good day
did good bit /14/

(42) result in increased
increase the result of /12/

(43) incentive
intensive /7/

Primacy of semantic mechanisms

Words unknown to subjects. Unknown words were omitted (see e.g., example (10) above), approximated phonologically (resulting in non-words),

(44) lingering
linkering /7/

(45) dimples
dipples /6/

or replaced by known words which bore partial phonological resemblance to the original item:

(46) bids
been /7/

(47) spurs
first /6/

Synonym replacement. This mechanism indicates correct pre-processing as well as analysis and possible semantic storage in short-term memory. Examples are:

(48) commented Collins
said Collins /10/

(49) immediate requirements
immediate needs /14/

(50) You go home alone, dear
You go home alone, darling /7/

Pressure of 'field of discourse'.[12] This mechanism seems to be at work in some replacive or intrusive items which belong to the specific vocabulary of a given field of discourse:

(51) little
Diesel /6/
(in Physics text)

(52) higher pay
higher rate /14/

(53) in increased labour turnover
in increased rate of labour turnover /14/

Primacy of syntactic mechanisms.

Simple morphological /syntactic changes: These are manifested in simple omissions, intrusions and replacements which come about mainly through causes (a), (b), (e) and (f) listed under Relationships and Process Types above. (see e.g. examples (1) to (7), (11) to (23)).

Complex morphological/syntactic reconstructive mechanisms: In these we may isolate (borrowing Clyne's[13] terminology from another context) a 'trigger' which sets off a process of further adjustment:

(54) once that need is satisfied
once that needs to be satisfied /9/

In the above example, the change of "need" to "needs" is the 'trigger' which leads to the subsequent adjustment, viz. replacing "is" by "to be".

Chains. While it is possible to establish the primacy of particular mechanisms in some deviant strings, in others all the various mechanisms combine to produce a whole 'chain' of further changes. Semantic, phonological and syntactic forces may all be at work in any combination to bring about a particular sequence of WO_{Mu}:

(55) Workers in non-industrial social systems often work hard

Work has been done in industrial social systems often work hard /6/

Here faulty phonological pre-processing ("workers" > "work has") brings about a complex syntactic reconstructive mechanism (intrusion of "been done") and this, in turn, leaves a syntactic residue, a 'floating constituent' which is left unanalyzed ("often work hard").

4. CONSEQUENCES FROM THE POINT OF VIEW OF L_B

As a final aspect, deviant strings of WO_{Mu} may be looked at from the point of view of L_B. From this point of view deviant strings fall into the following categories:

(1) a string which does not match the original SO_{Mo} but is grammatical in L_B. This category may be further subdivided into

(1a) non-anomalous and

(1b) anomalous strings[14]

(2) a string which does not match the original SO_{Mo} and is ungrammatical in L_B.

SOME QUESTIONS FOR FUTURE RESEARCH ON DIFFERENCES BETWEEN MULTILINGUAL AND MONOLINGUAL DECODING

The data we have collected for the present study do not allow us to compare multilingual decoding processes with those of monolinguals. The Australian English control group was mainly used in order to find a given speed and a style of 'natural' delivery of the passages which present virtually no hardship for speakers of Australian English. When we found, therefore, that the mean rate of deviant words in the WO of the control group was less than 1/2%[15] (two words per 425 words of text), we assumed that the SO_{Mo} met our requirements from the point of view of speed and naturalness. However, from our very small sample of WO_{Mo}, it appeared that some of the surface phenomena and processes isolated in WO_{Mu} may also be present in WO_{Mo}.

Much further work is required before any comparisons can be made in qualitative or quantitative terms between the decoding processes of multilinguals in one of their secodd langauages and those of monolingual native speakers in the same language. However, we hope that our discussion may be of some help in formulating questions for comparative studies.

Some of the questions which seem to us to deserve close attention are the following:

(1) What are the surface phenomena and the types of decoding mechanisms that are at work in the decoding processes of both multilinguals and

monolinguals in L_B, given identical conditions of signal transmission and receiption? What is the ratio of occurrence of each type? What phenomena occur only in multilinguals? Which, if any, phenomena are exclusive to monolinguals?

(2) How is faulty decoding in multilinguals and in monolinguals in L_B related to the speed of SO_{Mo}, to topic, to 'noise'? (for example, will some phenomena appear in monolingual decoding when the speed of SO_{Mo} is increased beyond 'lecturing speed'?)

(3) What happens in 'editing'? Are there major differences in the 'correcting processes' when multilingual and monolingual subjects are allowed to review visually what they have written?

(4) What are the differences between spoken and written re-coding in both multilinguals and monolinguals (i.e., if subjects were asked to repeat rather than to write down passages)?

(5) Are differences between multilinguals' and monolinguals' decoding processes (whatever these may turn out to be) parallelled by differences between two groups of native speakers of L_B distinguished along some sociological dimension (e.g., education standard, occupation etc.)?

APPENDIX

I. LIST OF SUBJECTS

1. Australian Female
2. Australian Male
3. Australian Male
4. Australian Male
5. Australian Female
6. Malay Male
7. Thai Male
8. Malay Male
9. Cantonese Male
10. Malay Male
11. Cantonese Male
12. Cantonese Male
13. Thai Male
14. Thai Female

II. TEXTS REPRESENTING SO_{Mu}

1. In the gaseous state the translational motion of the molecules has become sufficiently great to enable them to overcome entirely the restraining forces of attraction characteristic of the liquid state. Thus the gaseous state is one in which the component molecules of the gas are moving at high speeds in a completely random manner. The particles are relatively far apart at ordinary pressures, and the molecules exert little or no attraction upon one another. Because of the motion of the particles and the lack of restraining forces between them they distribute themselves evenly throughout the

volume of the system.

(excerpt from Crockford, H., and Knight, S. 1959. Fundamentals of Physical Chemistry. Sydney, Wiley.)

2. Pre-industrial man hardly resembles economic man at all. He has no desire to accumulate wealth for its own sake. Hunger and other physical needs are the primary spurs to economic activity, and when these are satisfied, incentive disappears. Workers in non-industrial social systems often work hard to satisfy an immediate need but cannot be spurred to further effort once that need is satisfied. In industrial societies higher pay usually holds down the rate of labour turnover. Pre-industrial workers tend to leave the job when their immediate requirements are satisfied, and higher pay may therefore result in increased labour turnover.

(Excerpt from Broom, L., and Selznick, P. 1963. Sociology. N.Y., Harper and Row)

3. She stopped on the mountain path and wrenched her arm away from Annie. "You go home alone, dear" she said. "I'm going for a little walk. It was so stuffy in that room, all the smoke, it upsets me, and I want ... I want to finish my picture," she cried in despair. Annie looked at her, her brows wrinkling. "Are you sure, Miss Brown? It's getting real late. I don't like to leave you alone." "Everyone has to be alone some time, Annie," Miss Brown said with dignity. Annie nodded her head.

(Adapted from Hewett, D. 1965. The Awakening of Miss Huggett. Westerly. August,1965)

4. As they whizzed over the splotchy grey moon, the astronauts took turns in calling out landmarks, the various craters, dimples and mountains charted by the other Apollos. Then the astronauts invited the world to share their sightseeing, and their pictures were beamed back for more than thirty minutes to the living rooms of earth. "The Sea of Fertility doesn't look very fertile to me," commented Collins. "I don't know who named it." With a lingering shot over the moon horizon, Collins closed the television show in true travelogue style. "And as the moon sinks slowly in the west, Apollo II bids good day to you," he said.
(Extract from Sydney Morning Herald, June, 1969)

NOTES

1. A monolingual, for the purposes of this paper, is defined as a person who communicates with a multilingual in one of the multilingual's second languages, who is a native speaker of that language, and who does not share any of the multilingual's other languages.

2. A notable exception is Muskat-Tabakowska's (1969) exploration of the concepts of competence and performance in relation to the role of the language teacher.

3. See e.g., Chomsky 1965:4 and elsewhere.

4. The need to separate distinctly different areas of meaning denoted by the term 'competence' has been explored more fully in Kaldor, in press.

5. We accept the premise that there is both signal-pre-processing and synthesis in decoding, without entering into the controversy as to whether these two processes function independently, simultaneously or in overlapping sequences.

6. Unless, of course, the monolingual is familiar with the specific nature of the multilingual's competence in L_B and can modify his speech to suit his interlocutor.

7. The arrow indicates that we are only referring to one direction of this communicative situation.

8. The phonological system of the speaker corresponds most closely to Mitchell and Delbridge's (1965) 'Cultivated Australian English'.

9. Excerpts are numbered continuously in brackets ( ) for ease of reference. Numbers enclosed by // indicate the subject's serial number (see Appendix).

10. In these three examples there is a departure from our representation of other sets of examples by adding an indication of suprasegmental features present in SO_{Mo}.

11. Eagle and Ortof, 1967.

12. For an elaboration of this concept, see e.g., Halliday, 1964:90.

13. See Clyne, 1967.

14. Provided, of course, that SO_{Mo} is both grammatical and non-anomalous.

15. By comparison, the multilingual decoders' mean rate was 21%.

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